Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A disk-like recording medium for concentrically recording auxiliary information of a disk in a second area other than a first area for recording contents data of said disk by a predetermined code, the recording medium comprising:

n blocks, each block of said n blocks obtained by dividing said second area into n equal parts in a circumferential direction; and

m frames, each frame of said m frames obtained by dividing said each block into m equal parts in the circumferential direction, wherein said auxiliary information is arranged in said frames in such a manner as to be at equal intervals in the circumferential direction, and

wherein said each frame includes a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, such that said synchronization signal provides synchronism necessary for a playback apparatus to read said auxiliary information recorded in said second area, and

wherein said auxiliary information is modulated by a 4-1 modulation method that modulates two data bits into seven channel bits.

2. (Original) A disk-like recording medium as claimed in claim 1 wherein in one of said frames, k channel bits are arranged at intervals obtained by dividing said frame into k equal parts.

3-4. (Canceled)

5. (Original) A disk-like recording medium as claimed in claim 1 wherein, when a value of said m is two or more, the number of kinds of said synchronization signals is two or more and m or less.

6. (Original) A disk-like recording medium as claimed in claim 1 wherein an error correction code is added to said auxiliary information.

7. (Canceled)

8. (Currently Amended) A disk recording apparatus for recording auxiliary information of a disk concentrically over a plurality of tracks in a second area other than a first area for recording contents data of said disk by a predetermined code comprising:

rotating means for rotating said disk;

generating means for generating a channel clock corresponding to an interval obtained by dividing one frame into k equal parts, where n blocks, each block having a length obtained by dividing said second area into n equal parts in a circumferential direction, are generated, and m frames, each frame having a length obtained by dividing said each block into m equal parts in the circumferential direction, are generated,

wherein said channel clock is derived from a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, such that said channel clock is required for recording said auxiliary information in said second area;

control means for controlling rotation of said disk so that one rotation of said disk is in synchronism with a cycle of n x m x k channel clocks;

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modulating means for modulating said auxiliary information on the basis of said channel

clock generated by said generating means,

wherein said auxiliary information is modulated by a 4-1 modulation method that

modulates two data bits into seven channel bits; and

recording means for recording said auxiliary information modulated by said modulating

means on said disk.

9. (Currently Amended) A disk recording method for a disk recording apparatus for

recording auxiliary information of a disk concentrically over a plurality of tracks in a second area

other than a first area for recording contents data of said disk by a predetermined code

comprising:

a rotating step for rotating said disk;

a generating step for generating a channel clock corresponding to an interval obtained by

dividing one frame into k equal parts, where n blocks, each block having a length obtained by

dividing said second area into n equal parts in a circumferential direction, are generated, and m

frames, each frame having a length obtained by dividing one of the blocks into m equal parts in

the circumferential direction are generated,

wherein said channel clock is derived from a synchronization signal whose pattern is

formed by arranging marks or spaces in three or more contiguous channel bits, such that said

channel clock is required for recording said auxiliary information in said second area;

a control step for controlling rotation of said disk so that one rotation of said disk is in

synchronism with a cycle of n x m x k channel clocks;

a modulating step for modulating said auxiliary information on the basis of said channel

clock generated by processing of said generating step,

wherein said auxiliary information is modulated by a 4-1 modulation method that

modulates two data bits into seven channel bits; and

a recording step for recording said auxiliary information modulated by processing of said

modulating step on said disk.

10. (Currently Amended) A disk playback apparatus for playing back a disk on which

auxiliary information of said disk is recorded by a predetermined code concentrically over a

plurality of tracks in a second area other than a first area, in which contents data is recorded, on

the basis of channel bits having intervals obtained by dividing one frame into k equal parts,

where n blocks, each block having a length obtained by dividing said second area into n equal

parts in a circumferential direction, are generated, and m frames, each frame having a length

obtained by dividing one of the blocks into m equal parts in the circumferential direction, are

generated, said disk playback apparatus comprising:

rotating means for rotating said disk at a constant angular velocity;

playback means for playing back said disk;

generating means for generating a clock having a frequency twice n x m x k or higher,

wherein said clock is derived from a synchronization signal whose pattern is formed by

arranging marks or spaces in three or more contiguous channel bits, such that said clock is

required for recording said auxiliary information in said second area, and

wherein said auxiliary information is modulated by a 4-1 modulation method that

modulates two data bits into seven channel bits; and

demodulating means for sampling a signal outputted by said playback means on the basis

of said clock generated by said generating means and demodulating said channel bits, or words

while correcting said channel bits, or the words.

11. (Original) A disk playback apparatus as claimed in claim 10, further comprising

correcting means for making error correction on the basis of an error correction code included in

said auxiliary information and determining correct auxiliary information by majority rule.

12. (Original) A disk playback apparatus as claimed in claim 11 wherein said correcting

means makes error correction on auxiliary information obtained by collecting portions

determined by majority rule.

13. (Currently Amended) A disk playback method for a disk playback apparatus for

playing back a disk on which auxiliary information of said disk is recorded by a predetermined

code concentrically over a plurality of tracks in a second area other than a first area, in which

contents data is recorded, on the basis of channel bits having intervals obtained by dividing one

frame into k equal parts, where n blocks, each block having a length obtained by dividing said

second area into n equal parts in a circumferential direction, are generated, and m frames, each

frame having a length obtained by dividing one of the blocks into m equal parts in the

circumferential direction, are generated, the disk playback method comprising:

a rotating step for rotating said disk at a constant angular velocity;

a playback step for playing back said disk;

a generating step for generating a clock having a frequency twice n x m x k or higher,

wherein said clock is derived from a synchronization signal whose pattern is formed by

arranging marks or spaces in three or more contiguous channel bits, such that said clock is

required for recording said auxiliary information in said second area, and

wherein said auxiliary information is modulated by a 4-1 modulation method that

modulates two data bits into seven channel bits; and

a demodulating step for sampling a signal outputted by processing of said playback step

on the basis of said clock generated by processing of said generating step and demodulating said

channel bits, or words while correcting said channel bits, or the words.